

**BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT**

**Coincidental Maximum Load**

<b>Date:</b>	<b>October 3, 2022</b>
<b>Hours:</b>	<b>19:00 Hours</b>

<b>Date</b>	<b>Time</b>	<b>Load(MW)</b>
30-Aug-22	19:23 hrs	536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	0.00	400kV THP - Siliguri Line - I	171.00	Unit-I under shutdown
		Unit- II	100.00	400kV THP - Siliguri Line - II	170.00	
		Unit- III	170.20	400kV THP - Siliguri Line- IV	165.00	
		Unit- IV	170.30	400kV THP - Malbase Line - III	217.00	
		Unit- V	168.40	400kV Malbase - Siliguri Line	152.00	
		Unit- VI	130.60	-	-	
		<b>Total</b>	<b>739.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>2.23%</b>	
2	720MW MHP	Unit-I	80.18	400kV MHP - Jigmeling Line - I	175.36	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	130.23	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	85.51	400kV MHP - Jigmeling Line - III	176.35	
		Unit-IV	130.50	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	72.72	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	14.65	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	83.30	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	125.17	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	124.20	
		-	-	80MVA, 220/132kV ICT - I (HV)	15.41	
		-	-	80MVA, 220/132kV ICT - II (HV)	15.71	
		-	-	220kV Tsirang - Jigmeling Line	-12.69	
-	-	132kV Gelephu - Salakati Line	14.20			
<b>Total</b>	<b>426.42</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.47%</b>			
3	336MW CHP	Unit- I	92.15	220kV CHP - Birpara Line- I	68.72	
		Unit- II	91.81	220kV CHP - Birpara Line- II	68.07	
		Unit- III	91.96	220kV CHP - Malbase Line- III	117.18	
		Unit- IV	76.00	220kV CHP - Semtokha Line- IV	71.94	
		-	-	220kV Malbase - Birpara Line	22.40	
		-	-	66kV CHP - Chumdo Line	17.50	
		-	-	66kV CHP - Gedu Line	5.13	
		-	-	3x3MVA, 66/11kV TFR	0.91	
<b>Total</b>	<b>351.92</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.70%</b>			
4	24MW BHP (U/S)	Unit- I	10.10	220kV BHP - Semtokha Line	38.30	
		Unit- II	9.70	66kV BHP - Lobeyssa Line	25.46	
		<b>Total</b>	<b>19.80</b>	220kV BHP - Tsirang Line	-10.25	
5	40MW BHP (L/S)	Unit- I	17.30	5MVA, 66/11kV TFR	0.60	
		Unit- II	17.20	30MVA ICT, 220/66kV (HV)	6.51	
		<b>Total</b>	<b>34.50</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.35%</b>	
6	126MW DHP	Unit-I	31.30	220kV DHP - Tsirang Line	0.00	220kV DHP_Tsirang Line on Standby.
		Unit-II	30.02	220kV DHP - Dagapela Line	60.88	
		-	-	220kV Jigmeling - Dagapela Line	-29.86	
		-	-	5MVA, 220/33kV TFR	0.30	
<b>Total</b>	<b>61.32</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Gen. end</b>	<b>0.23%</b>			
7	60MW KHP	Unit- I	16.50	132kV KHP - Nangkhoh Line	36.69	
		Unit-II	16.50	132kV KHP - Kilikhar Line	28.30	
		Unit- III	16.50	5MVA, 132/11kV TFR	0.69	
		Unit- IV	16.50	132kV Motanga - Rangia Line	42.89	
		<b>Total</b>	<b>66.00</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.48%</b>	

**Note: Generation-Load Summary (MW) for October 03, 2022 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	1,207.04	372.68	353.38	817.19	19.30
2	Eastern Grid	492.42	119.83	117.52	389.76	2.31
<b>Total</b>		<b>1,699.46</b>	<b>492.51</b>	<b>470.90</b>	<b>1,206.95</b>	<b>21.61</b>

**Note: Generation-Load Summary for October 03, 2021 at 19:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	1,508.29	319.04	312.75	1,146.22	6.29
2	Eastern Grid	561.71	67.92	65.05	536.82	2.87
<b>Total</b>		<b>2,070.00</b>	<b>386.96</b>	<b>377.80</b>	<b>1,683.04</b>	<b>9.16</b>

**NOTE- all eastern data collected from site.**

1. The Instantaneous load balance,calculated as (Total generation - (Total export-Import) - Total domestic load), do not tend towards zero. This could be due to the following reasons:

- i) Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
- ii) The clocks of all the locations are not synchronized.

2. This report is generated to give an idea of the generation & load flow for the system at a particular instant.

**BHUTAN POWER SYSTEM OPERATOR LOAD-GENERATION BALANCE REPORT**

**Coincidental Maximum Load**

**Date:** October 4, 2022  
**Hours:** 09:00 Hours

Date	Time	Load(MW)
30-Aug-22	19:23 hrs	536.69

Sl. No.	Hydropower Plant	Unit	MW	Transmission Lines and Elements	Load (MW)	Remarks
1	1020MW THP	Unit- I	136.64	400kV THP - Siliguri Line - I	177.41	
		Unit- II	90.05	400kV THP - Siliguri Line - II	175.67	
		Unit- III	99.58	400kV THP - Siliguri Line- IV	171.43	
		Unit- IV	99.50	400kV THP - Malbase Line - III	197.68	
		Unit- V	167.06	400kV Malbase - Siliguri Line	164.19	
		Unit- VI	129.09	-	-	
		<b>Total</b>	<b>721.92</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>-0.04%</b>	
2	720MW MHP	Unit-I	80.21	400kV MHP - Jigmeling Line - I	181.13	400kV MHP-JLG Line II & IV on Standby. 132kV MHP_Yurmoo line I not in service. 400kV JLG_ALI Line II (Interim) on Standby.
		Unit-II	130.19	400kV MHP - Jigmeling Line - II	0.00	
		Unit-III	85.61	400kV MHP - Jigmeling Line - III	182.31	
		Unit-IV	130.45	400kV MHP - Jigmeling Line - IV	0.00	
		-	-	132kV MHP - Yurmo Line - I	0.00	
		-	-	132kV MHP - Yurmo Line - II	60.94	
		-	-	500MVA, 400/220kV ICT at Jigmeling (HV)	-58.50	
		-	-	400kV Jigmeling - Alipurduar Line - I (Interim)	104.70	
		-	-	400kV Jigmeling - Alipurduar Line - II (Interim)	0.00	
		-	-	400kV Jigmeling - Alipurduar Line - I (Direct)	157.01	
		-	-	400kV Jigmeling - Alipurduar Line - II (Direct)	157.58	
		-	-	80MVA, 220/132kV ICT - I (HV)	16.60	
		-	-	80MVA, 220/132kV ICT - II (HV)	16.90	
		-	-	220kV Tsirang - Jigmeling Line	-1.71	
-	-	132kV Gelephu - Salakati Line	20.76			
<b>Total</b>	<b>426.46</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.49%</b>			
3	336MW CHP	Unit- I	91.20	220kV CHP - Birpara Line- I	70.71	
		Unit- II	91.19	220kV CHP - Birpara Line- II	70.37	
		Unit- III	91.80	220kV CHP - Malbase Line- III	130.06	
		Unit- IV	74.97	220kV CHP - Semtokha Line- IV	57.92	
		-	-	220kV Malbase - Birpara Line	16.00	
		-	-	66kV CHP - Chumdo Line	14.58	
		-	-	66kV CHP - Gedu Line	4.28	
		-	-	3x3MVA, 66/11kV TFR	0.80	
<b>Total</b>	<b>349.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.13%</b>			
4	24MW BHP (U/S)	Unit- I	12.30	220kV BHP - Semtokha Line	40.10	
		Unit- II	12.20	66kV BHP - Lobeysa Line	24.96	
		<b>Total</b>	<b>24.50</b>	220kV BHP - Tsirang Line	0.25	
5	40MW BHP (L/S)	Unit- I	20.50	5MVA, 66/11kV TFR	0.40	
		Unit- II	21.20	30MVA ICT, 220/66kV (HV)	1.48	
		<b>Total</b>	<b>41.70</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.74%</b>	
6	126MW DHP	Unit-I	63.61	220kV DHP - Tsirang Line	0.00	220kV DHP_TSI Line on Standby.
		Unit-II	63.25	220kV DHP - Dagapela Line	126.37	
		-	-	220kV Jigmeling - Dagapela Line	-95.10	
		-	-	5MVA, 220/33kV TFR	0.20	
<b>Total</b>	<b>126.86</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.23%</b>			
7	60MW KHP	Unit- I	16.59	132kV KHP - Nangkhoh Line	40.04	
		Unit-II	16.52	132kV KHP - Kilikhar Line	25.02	
		Unit- III	16.52	5MVA, 132/11kV TFR	0.51	
		Unit- IV	16.53	132kV Motanga - Rangia Line	36.76	
		<b>Total</b>	<b>66.16</b>	<b>Auxiliary Consumption &amp; Transformation Losses at Generator end</b>	<b>0.89%</b>	

**Note: Generation-Load Summary (MW) for October 04, 2022 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	1,264.14	324.97	324.02	845.78	0.95
2	Eastern Grid	492.62	109.20	106.53	476.81	2.67
<b>Total</b>		<b>1,756.76</b>	<b>434.17</b>	<b>430.55</b>	<b>1,322.59</b>	<b>3.62</b>

**Note: Generation-Load Summary for October 04, 2021 at 09:00hrs.**

Sl. No	Region	Total Generation (MW)	Total Load [Generation - Export (MW)]	Total Load [Feeder Summation (MW)]	Total Export/Import (MW)	Auxiliary Consumption & Transformation Losses (MW)
1	Western Grid	1,374.22	301.43	294.99	1,045.69	6.44
2	Eastern Grid	527.85	59.83	56.92	495.12	2.91
<b>Total</b>		<b>1,902.07</b>	<b>361.26</b>	<b>351.91</b>	<b>1,540.81</b>	<b>9.35</b>

**Notes: Eastern data collected from site.**

1. The Instantaneous load balance,calculated as (Total generation - (Total export-Import) - Total domestic load), do not tend towards zero. This could be due to the following reasons:

- i) Not all the meters are digital and nor are all the meter at all locations can be read at same time (say 9:00hrs) due to many meter to be read manually.
- ii) The clocks of all the locations are not synchronized.

2. This report is generated to give an idea of the generation & load flow for the system at a particular instant.